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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/707,426 | 12/12/2003 | Rainer klaus Krause | DE920020037 | 1425 |

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| EXAMINER | |
|---|---|
| MCPHERSON, JOHN A | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 1756 | |

DATE MAILED: 05/31/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/707,426 | KRAUSE ET AL. | |
| | Examiner | Art Unit | |
| | John A. McPherson | 1756 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *14 March 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-6 and 8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6 and 8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.



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## DETAILED ACTION

### *Response to Amendment*

1. The Amendment filed 3/14/05 successfully overcomes the rejections set forth in paragraphs 2 and 4 of the Office Action mailed 12/14/05. Accordingly, these rejections are withdrawn.

### *Specification*

2. The disclosure is objected to because of the following informalities: it appears that in paragraph [0027] the text "Anna Marie Petrera/Markham/IBM @ IBMCA" should be deleted. Appropriate correction is required.

3. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

The embodiment wherein the microstructure has an aspect ratio in a range of 1:5 to 1:20, currently presented at claim 1, lines 3-4 and claim 2, lines 4-5, is not described in the specification. The Examiner notes that this limitation was present in original claim 7 (now canceled), and is therefore not new matter.

### *Claim Rejections - 35 USC § 103*

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 2 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,653,030 to Mei et al. (Mei). Mei discloses a method for fabricating micron and sub-micron sized features within a polymer layer that combines mechanical stamping with lithography-like UV radiation-induced polymer curing, wherein small features are directly imprinted with an optical-mechanical stamp, and large features are created by exposing the polymer through the optical-mechanical stamp. The optical-mechanical stamp is manufactured by molding polydimethyl siloxane (PDMS) and fixing a UV mask to the stamp. See the abstract; column 6, line 16 to column 7, line 4; column 8, lines 15-25; and Figures 4A-D. Furthermore, Mei discloses that the aspect ratios of the intrusions of the mechanical pattern imprinting masks are limited by various mechanical and fluid-flow constraints, and that for PDMS masks the aspect ratios need to be greater than or equal to 1:3. See column 5, lines 47-51. However, Mei does not disclose manufacturing a microstructure having an aspect ratio in a range of 1:5 to 1:20. It would have been obvious to one skilled in the requisite art to arrive at a microstructure having an aspect ratio in a range of 1:5 to 1:20 in the method of Mei because it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges of a result effective variable involves only routine skill in the art. *In re Aller,* 105 USPQ 233 and *In re Boesch,* 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

5. Claims 1-6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,653,030 to Mei et al. (Mei) in view of US 5,901,432 to Armstrong et al. (Armstrong). The disclosure of Mei is discussed above in paragraph 2. Additionally, Mei teaches utilizing the optical-mechanical stamping process to form electro-magnetic devices. See column 1, lines 20-25. However, Mei does not disclose a method wherein the mask comprises a plating pattern, or wherein the device produced is a P2 structure of a magnetic recording head. Armstrong discloses a method for making a thin film inductive write head comprising the steps of forming photoresist pattern to define the shape of a second pole piece (P2), and then electroplating to form the second pole piece. See the abstract; column 5, line 35 to column 6, line 5; and Figures 3E-3J. It would have been obvious to one skilled in the requisite art of form a plating pattern by photolithography when manufacturing a second pole piece, as taught by Armstrong, utilizing the optical-mechanical stamping process of Mei because it is taught that photo exposing plating patterns in photoresist provides a pattern for the plating of a P2 pole piece of a magnetic head, and it is taught that the optical-mechanical stamping process patterns features within a photoresist layer in device manufacturing processes, including processes of forming electro-magnetic devices.

***Claim Rejections - 35 USC § 102/103***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 8 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over US 2001/0022704 to Hong (Hong). Hong discloses a write head comprising a second pole (P2), wherein the second pole is manufactured by a process comprising providing a photoresist structure having a trench (corresponding to the microstructure of the present invention) over a conductive BARC layer, and plating the second pole on the conductive BARC layer. See the abstract and paragraphs [0054]-[0056]. Furthermore, Hong teaches that it is desirable to have a P2 width, and thus a trench width, of approximately 0.45-0.75 μm (paragraph [0037]), and a trench thickness of one micrometer thinner than if a convention BARC is used (paragraph [0056]), which is disclosed as approximately 8-9 μm (paragraph [0038]). Therefore, the trench of Hong has width of approximately 0.45-0.75 μm and a thickness of 7-8 μm (i.e. 8-9 μm minus 1 μm), which corresponds to an aspect ratio in a range of 0.75:7 to 0.45:8, or 1:9.3 to 1:17.8.

The P2 of the prior art is formed by plating into a photoresist trench, as is the P2 structure of the present invention, wherein the photoresist trench of the prior art has an aspect ratio within the range of the present invention, although the photoresist of the

prior art is not patterned by the process of the present invention. Both P2 structures are formed of metal plated into a photoresist pattern having the same aspect ratio, therefore the design of the mask utilized to form the photoresist pattern does not appear to provide a patentable distinction between the claimed P2 structure and the P2 pole piece of the prior art, when the resulting structures are the same.

It has been held that the patentability of a product does not depend on its method of production. If the product in a product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even if though the prior art product was made by a different process. *In re Thorpe,*777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). Furthermore, when the prior art discloses a product which reasonably appears to be either identical with or only slightly different than a product claimed in a product-by-process claim, a rejection based alternatively on either section 102 or section 103 of the statue is eminently fair and acceptable. *In re Brown,* 459 F.2d 531, 535, 173 USPQ 685, 688 (CCPA 1972). See MPEP 2113.

***Response to Arguments***

7. Applicant's arguments with respect to claims 1-6 and 8 have been considered but are moot in view of the new ground(s) of rejection.

With respect to the objection to the specification, Applicant's authorization for the Examiner to delete the cited text from paragraph 0027 is acknowledged. However, because this application is not otherwise in condition for allowance, it is not appropriate for the Examiner to correct the specification by a formal Examiner's Amendment at this

time. Accordingly, as Applicant did not correct the specification in the Amendment filed 3/14/05 and the Examiner is not correcting the specification in this Office Action, the objection has been repeated above.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John A. McPherson whose telephone number is (571) 272-1386. The examiner can normally be reached on Monday through Friday, 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on (571) 272-1385. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

John A. McPherson
Primary Examiner
Art Unit 1756

JAM
5/26/05